The Challenge of Demonstrating the Impact of Research Beyond Traditional Mechanisms

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Abstract: The concept of 'impact' in academia is a focus of not only research councils but also of nationwide institutional research evaluations. In the UK, it is necessary for academics and their institutions to not only conduct research which has real impact, but to provide evidence of impact beyond academic bibliometrics. This includes evidence of impact on industry, government, wider communities and beyond (REF 2011). In Australia, the Excellence in Research for Australia (ERA) requirements for the 2015 reporting indicate research outputs, income, and both applied and esteem measures, are to be used to assess the excellence of research activity (Australian Research Council 2014). In addition the Australian Research Council (ARC) has piloted a new tool, the Excellence in Innovation for Australia (EIA) as a potential companion exercise alongside ERA to measure impact. This paper provides an overview of impact definitions in the UK and Australia, drawing on guidance from research councils and the UK's Research Excellence Framework (REF). The research assessment environments in both countries are also described. The challenges of research assessment and the introduction of impact into this are discussed. The analysis of four impact case studies, published by the Economic and Social Research Council (ESRC) from the UK, is presented and discussed, and one author offers personal reflections into the construction of an impact case study for REF 2015. The paper ends with discussions on best practice, identified through critical examination of existing frameworks and case studies, on how to incorporate impact into research design ab initio, including anticipated and unanticipated impacts, as well as the collection of evidence to demonstrate these. At a time when the importance of impact is growing in the demonstration of institutional and personal research excellence and esteem, the paper contributes to an area of very significant dialogue and reflection for the research community, of value to both early career and senior researchers.

Keywords: Impact, UK, Australia, research evaluation

1. Introduction

Traditionally research assessment exercises in the UK and Australia have focussed on research institutions and their research environments, research staff members and outputs in order to assess the quality of research and allocate research funding based on assessment outcomes. In 2014 the United Kingdom became the first country to integrate "impact" into the national research assessment exercise – the Research Excellence Framework (REF). The allocation of public funding for university research will therefore be based on the wider impact of research, beyond academic impact and quality indicators. This places greater emphasis on the broader economic, social, cultural and environmental benefits of research. Similarly, Australia undertook a pilot exercise on the assessment of impact, based on REF, and it is proposed that the Excellence in Innovation for Australia (EIA) exercise sit alongside the current Excellence in Research for Australia (ERA) exercise, to allow for meaningful assessment of government funded research.

This paper describes the ways in which impact can be demonstrated and evidenced, drawing conclusions about how researchers' project management practices and behaviours might maximise routes to impact. Through (i) consideration of the UK and Australian approach to impact, (ii) the examination of a sample of Economic and Social Research Council (ESRC) case studies and (iii) personal reflections of writing an impact case for REF 2014.

This paper does not question the value of impact assessment, nor the ways in which such assessment is carried out: rather it acknowledges that the impact of research beyond academia will continue to play an important role in assessment of research performance and looks at ways in which the research community can maximise their effectiveness in conceptualising, achieving, demonstrating and evidencing research impact.

2. What is impact?

Research Councils UK defines impact as 'the demonstrable contribution that excellent research makes to society and the economy' (ESRC 2015a). The stress on *demonstration* of research impact is important, and can bring challenges, as discussed later in this paper. The ESRC suggests that in order to plan research impact, three factors must be considered: who are the key stakeholders? How will they benefit from your research? How will you ensure they have the opportunity to benefit from your research?

The REF defines impact as "an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia" (REF 2011). Excluded from the definition is impact on research or academic knowledge within HE, as well as on students, teaching or other activities within Higher Education Institutes (HEIs). Impact can be in relation to an activity, an audience, and in any geographic region, but must be underpinned by quality research through direct linkages to academic output in peer reviewed publications. The EIA definition of impact echoes that of the REF: however the EIA trial did not impose a quality threshold for the underpinning research outputs.

2.1 Research assessment in the UK

The REF, which superseded the Research Assessment Exercise (RAE), is the UK's research assessment framework, and since 1986 the results of such exercises have guided allocation of funding to HEIs for their research activities, based on the quality of staff research outputs. Institutions submitted to REF 2014 in November 2013, and the results of this exercise were published at the end of 2014.

In addition to the allocation of research funding, the REF also provides a measure of accountability for the investment of public funds, and allows for benchmarking and the establishment of reputational yardsticks (REF 2011). Institutions make submissions in five sections: information on staff; detail of publications and outputs; details of an institution's approach to enabling impact alongside case studies demonstrating impact; data about doctoral research degrees and research income; and description of the institution's research environment. Submissions are assessed within one of 36 units of assessment by expert panels.

2.2 Research assessment in Australia

In Australia the ERA is the method of research assessment, conducted by the Australian Research Council (ARC), and aims to "identify and promote excellence across the full spectrum of research activity, including discovery, experimental and applied research within Australian higher education institutions" (ERA 2014 p. 10). As with REF, the ERA provides public assurance about research quality, helps to identify areas for development, measures excellence and creates opportunities for benchmarking.

HEIs' submissions to the ERA are comprised of six components: explanatory statements; eligible research data; data on research outputs; research income; applied measures; and esteem measures (ERA 2014). Esteem measures relate to individual researchers and are indicative of the individual's standing in their field and include: editorship of a prestigious reference work, fellowship of a learned academy and membership of the Australian Institute of Aboriginal and Torres Strait Islander Studies, winning a nationally competitive research fellowship, or being the recipient of an ARC grant or Fellowship.

There is currently no provision for the assessment of research impact in the ERA and the EIA was a pilot study conducted to: a) measure the innovation dividend of Australian research and; b) as a potential companion exercise with ERA to allocate research funding. The EIA considered research impact using a similar model to REF in the UK, through the production of case studies (Morgan Jones et al 2013). Twelve Australian universities took part in the EIA exercise and submitted 162 research case studies for assessment. Each participating university was asked to provide a maximum of five cases for each of the four sectors nominated (Defence; Economic Development; Society; Environment). As with REF the EIA was seeking evidence of research impact, beyond traditional metrics, outside academia. Case studies were examined by expert panels comprised of a majority of end-user, rather than academic, stakeholders. The pilot demonstrated research impact across disciplines, indicating that the case study approach is a good way of communicating impact to stakeholder groups beyond academia. There was however a lack of skills amongst HEIs in the effective writing of case studies, and a lack of verifiable sources to corroborate impact statements. Equally there was a lack of understanding that demonstrable impact was required to be described and evidenced, not prospective impact.

2.3 The challenges of research assessment

Publication bibliometrics are traditionally used in research assessment; however, journal rankings and citation counts are increasingly seen as less-than-optimal for judging research impact. 'Altmetrics' have gained traction as a way of examining user engagement with research outputs by counting the number of views, shares, saves or even media coverage an output receives. However dissemination and reach do not equate to impact and user engagement with outputs in a broader sense also does not equal impact (Watermeyer 2014), but can be a useful mechanism for identifying research beneficiaries, stakeholders or partners. The assessment of research is no longer a numbers game and to adequately understand the impact of research a qualitative approach has been developed, currently manifest through the notion of impact as described above.

Media coverage of the REF is generally negative (Murphy and Sage 2014) and is perceived to influence research publication and research undertaken by institutions, as well as influencing staff behaviour and morale. The introduction of impact into research assessment in the UK has not been uncontested, with lively discussions around the viability (Dunleavy 2011) and suitability (Oswald 2009) of impact assessment. However, Andrew Witty, CEO of GlaxoSmithKline, in his review of British universities and growth, was encouraged by the introduction of impact to REF, suggesting that impact resonates with industry as a valuable way of encouraging research application (Witty 2013).

Beyond the philosophical debate around the value of impact assessment there are challenges around identifying, measuring and evidencing impact, especially in the context of business research, where there can be barriers to identifying any behavioural or strategic changes which may have been triggered by specific academic research. People in business roles may not make it explicitly clear that their thinking has been influenced by academic research, if indeed they are fully conscious of its influence. The ability of academics to gather and assimilate evidence of the impact of their work can be influenced by issues around time management, capacity and prioritisation, methods of dissemination and translation, professional hierarchy, localism and internationalism of research foci, and the ownership of research outputs and their translation into public outcomes (Watermeyer 2014). Despite these challenges the notion of "impact work" and "professional malleability" are increasingly part of the normal activities of academics in what Watermeyer (2014, p. 373) describes as the "inescapability of academic capitalisation".

2.4 The ESRC and impact

The ESRC aims to broadly demonstrate the contribution of social science research to society and the economy and therefore requires researchers who are funded by the council to consider the potential scientific, societal and economic impact of their research. When applying for ESRC funding, researchers complete 'Pathways to Impact', as an exploration of potential beneficiaries and how to increase their chances of benefitting in the longer term.

The ESRC commissioned impact evaluation to identify and analyse evidence of impact, and to develop suitable impact evaluation methods by funding a project which sought to evaluate the business impact of social science (ESRC 2013). Three business schools who received significant funding from the ESRC were a focus of the study. Overall it was found that fostering a collaborative, open for 'business' environment with advisory positions, idea generation and real connections with existing businesses, was conducive to generating impact. Equally, the report found that not all academics were committed to achieving business impact and that there existed a terminological barrier between academia and business, resulting in a need for the 'repackaging' of research. It was acknowledged that building and maintaining relationships with businesses is time consuming and intensive, and consultancy relationships were treated with both scepticism and positivity. Such relationships were seen as providing value in the generation of knowledge and of areas for further research; however there remained those academics who view consultancy as less *legitimate* than scholarly research.

The ESRC's impact evaluation to date has identified some powerful impact enablers:
- Established relationships and networks with user communities
- Involvement of users throughout research
- Well planned user engagement and knowledge exchange
- Understanding of policy/practice contexts and timescales

- Portfolios of research activity that build reputations with research users
- Good management and infrastructural support
- Involvement of intermediaries and knowledge brokers as translators, amplifiers and network providers

The ESRC do however acknowledge that impact can be messy, non-linear and influenced by other non-research factors, and that the attribution of direct or indirect research influence is challenging.

3. Methodology

Due to the limitations of paper size and the more advanced nature of impact assessment in the UK as compared to Australia, UK case studies were chosen for the content analysis presented in this paper. The ESRC publish online a selection of impact case studies of funded research projects from across disciplines (ESRC 2015b). No rationale is given for the inclusion of particular case studies in their selection. In the 'business' discipline there are 30 impact case studies listed from 2000-2014. Content analysis was undertaken on four of the 30 to establish the approaches taken to demonstrate and evidence impact. A systematic approach was taken to identifying appropriate case studies to be analysed, which considered the materials available for analysis and the requirements for submission to the REF/ERA assessments. Case studies which were based on Knowledge Transfer Partnerships (KTPs) were disregarded for analysis as the approach and management of such projects is distinct from 'traditional' academic research projects. Case studies which detailed the impact rather than both the impact and underpinning research were excluded. Finally, to allow for consistency in analysis, the case studies which included ESRC reports (either End of Award or Impact reports, or both) were selected. The four case studies, summarised in Table 1, selected for content analysis were of varying subject matter and conducted between 2009 and 2014.

	Project Title	Project Summary	ESRC Documentation
1	*Helping the environment with social marketing* RES-189-25-0326	An exploration of the potential of using social marketing to promote rail travel over short-haul flights.	- End of Award Report - Impact Report
2	*Regulation of the erotic dancing industry* RES-000-22-3163	An investigation of lap dancing clubs in the UK: experiences of women who work in the industry; working conditions and feelings about the work; an exploration of the regulation and governance of the industry.	- End of Award Report - Impact Report - Summary of Impact - Policy Influence Details
3	*How our prisons perform* RES-062-23-0212	A systematic, empirical investigation of the values, practices, organisation and consequences of public and private sector corrections.	- End of Award Report - Impact Report
4	*Game time for pupils* RES-328-25-0001	The development of software allowing young people to create their own 3D computer game.	- End of Award Report

Table 1: Summary of case studies and documentation used for content analysis

The research team examined information provided on the ESRC website for each selected case study. This was often a lay-summary of the project and a summary of the impact. Each case study webpage linked to the relevant ESRC grant page, published reports or other outputs, and any tangible products of the research. Content analysis was conducted on the published ESRC outputs available. A summary of the documentation used for each project is provided in Table 1, each analysed for the range and nature of impacts reported, and details on why and how impact was generated and evidence, in order to distil any good practice.

The approach taken to the selection and analysis of the case studies presented for this study was designed in a way to allow for comparable analysis, with good examples of impact reporting. The sample drawn is from a wider selection of impact reports, allowing for initial explorations on impact in business research and the

associated challenges. Other methodologies may prove more fruitful and will certainly be developed in response to the publication of the REF 2014 impact case studies in 2015.

4. Findings

Four case studies were analysed in terms of (i) methodologies used; (ii) published outputs of the research; (iii) approaches taken to raise awareness of and interest in the research; and (iv) evidenced impact.

Case Study Content Analysis				
	Methodology	**Outputs**	**Dissemination**	**Impact**
1	• Workshops • Consumer/Stakeholder focus groups • Product presentations • Mobile app creation	11 outputs including: • End of project reports • Interim reports • Workshops • Summaries • Further research proposals	• Summaries of research findings produced • Launch of app	• On policy • On government reports • On government agency practice • On industry practitioners • On app development and delivery • On partner company • On other researchers

2	• Population studied – cities in North and South
	• Mixed methodology:
	  - Interviews
	  - Survey
	  - Observation
	• Consultation with industry regulators
	• Creation of app and website
		8 outputs including:
		• End of project reports
		• Summary of impact
		• Policy influence report
		• Academic debate
		• Website
			• Press releases, interviews etc.
			• Bulletin to practitioners
			• Direct presentation of findings to industry regulators
				• On practitioners
				• On local authority licencing committee policy and practice
				• On national policy
				• On practitioners

3	• Four case study organisations – both qualitative and quantitative methodology employed	21 outputs including: • End of project reports • Monograph chapters • Articles • Website • Podcasts	• Reports to practitioner groups • Dissemination to targeted professional/advisory bodies • News item • Magazine article	• On government agency practice • On practitioners and organisations • On other researchers • On broad practice internationally • On future research agendas

Case Study Content Analysis				
	Methodology	**Outputs**	**Dissemination**	**Impact**
4	• Two case study organisations • Observations • Interviews • Mobile app creation	Over 15 outputs including: • End of project reports • Conference attendance	• Targeted dissemination to professional bodies/interest groups • Press releases • Wider media engagement • Targeted dissemination to key policy agencies	• On practitioners • On sector more broadly • On professional body • On industry group • On government agency • On ancillary industry support to sector

Table 2: Impact case study analysis

In considering whether research methodology can enhance impact, it would appear that these cases did not necessarily design data collection approaches with this in mind. However, the cases illustrate that certain data collection techniques will aid awareness-raising, as in case 1 where the methodology involved stakeholder focus groups. For the others the study populations were more limited by the intrinsic nature of the research, but the results were of wider potential significance to a larger user community.

In terms of published outputs, these varied across cases. All produced outputs for the academic community, through conference papers, journal articles and monographs and this clearly remains a high priority for researchers. The cases also cited a variety of other forms of dissemination as public output, including bulletins and direct presentations, as well as the ubiquitous electronic dissemination, via websites and podcasts.

The key types of impact claimed were on:
- Government policy formulation and implementation;
- Government agency practice;
- Local authority policy and practice;
- Organisational/company practice – either in a sector widely or individually;
- Professional bodies/advisory bodies;
- Ancillary industries or groups;
- Training approaches and/or best practice guidelines;
- Research partners;
- Other researchers;
- Any of the above internationally.

The extent to which all of these routes to impact are feasible, realistic and desirable will vary with the nature of a research project, but all might, or should, be considered early in the design of a research project. Finally, in terms of dissemination of research findings, the cases suggest a number of options which should be considered throughout the life of a project:

- Engagement with the news media through press releases, opinion pieces, photo opportunities, interviews etc.;
- Release of summaries of findings during and at the conclusion of a project;
- Bulletins for practitioners;
- Press releases and content production for practitioner media, such as trade journals;
- Presentations to practitioners/industry, at seminars or workshops;
- Targeted communications to influential groups, including policy agencies and professional bodies;
- Visualisations and other media, including social media, websites and apps;
- Direct engagement and discussion with influential figures.

Where practitioner partner bodies were involved, this was likely to enhance dissemination to the partner organisation(s) and beyond. This list is not comprehensive but is indicative of the scale of effort that is required for effective dissemination beyond conventional academic approaches. It also illustrates the extent to which some of these activities may lie outside the traditional skill set of the researcher. A caveat must be given regarding engagement with news media; media coverage itself does not constitute impact in REF. What news coverage can do is enhance the reach of research findings, as well as being a corroborative source of impact if the research findings are the subject of the reportage.

5. Reflection on compiling a case study for REF

The following reflections are derived from the first-hand experience of one author in reference to developing an impact case study for REF 2014. Compiling a case study proved a valuable exercise in testing the ways in which it was possible to demonstrate impact and in identifying some of the challenges associated with doing so retrospectively. The case study upon which observations are drawn was submitted to Unit of Assessment 36 of the REF and was entitled '*Impact on information management, behaviour and communications in the energy sector*'.

It was important to conceive of the case as representing a body of work, beyond the strict parameters of REF submission dates, to take the opportunity to demonstrate how conceptually the research had evolved and how it linked to other pieces of research beyond the industry context of the case submitted. However, equally importantly, the case had to be grounded at its core on key, REF appropriate, high quality academic outputs. It also became apparent that the strength of a case, at its best, need not rely on a single researcher but could – and arguably should – demonstrate the strength of a wider team.

The most compelling evidence emanated from two sources, firstly impact on government and regulatory authorities and secondly impact on practitioners in as wide a geographic spread as possible. Gathering evidence of impact retrospectively proved challenging, largely as a result of the recent appearance of impact in REF, but also because of some innate reluctance to seek recognition, praise or thanks. Equally there had been a degree of carelessness in storing and recording evidence, which at the time might have seemed ephemeral. Fortuitously, commissioning bodies and industry partners proved more than willing to evidence and support the case in terms of impact. On the basis of this personal experience, non-academics would appear to be better at monitoring and recording impact than academic institutions and researchers. The importance of personal connections, and maintaining these in a positive manner, to allow for engagement, cannot be underestimated. In this instance there was arguably an element of luck involved in that key people remained in roles, were contactable and had the will and capacity to reflect and provide the required evidence.

The writing of the case also illustrated the importance of accepting the widest range of invitations (in some instances invitations not necessarily regarded as important in strict research terms) in particular presenting to practitioner groups and being willing to participate in government advisory bodies – the latter in particular sometimes involving immense expenditure of time and effort for no immediate research return.

Finally this personal experience would support the ESRC contention that consultancy is a very important way of gaining traction with, and the ear of, industry and government. More than one of the key pieces of research that underpinned the impact case were consultancy projects, which at the time the particular author would have seen as less prestigious than research council funding, but which in fact enabled more direct engagement with those involved in policy and practice who were able to assist in powerful dissemination and the demonstrable use of research by others.

6. Discussion on best practice for impact demonstration

In drawing out lessons for best practice there are a number of recommendations to note. At the earliest stage of conceiving a research project, researchers need to carefully consider the kinds of impact possible and desirable from the research results. For example, researchers need to consider each of the types of impact identified earlier, and whether it would be achievable and under what conditions this proposed impact might be maximised.

This initial process should aid in the identification and mapping out of key stakeholder groups, an essential part of the process. Thinking about the kinds of data that will be influential for these stakeholders can aid in the shaping of dissemination targets and the format and presentation of such. The process of stakeholder identification and engagement with influential voices from each of the stakeholder groups that you are seeking to impact (e.g. government, regulatory bodies, professional groups, customers, the media or public opinion) is crucial. Additionally, designing into the project early forms of consultation and engagement with stakeholder groups and enlisting stakeholder groups in the dissemination effort, particularly through professional, practitioner and advisory groups, is a vital exercise. The closer your understanding of the agenda of your stakeholder groups, the likelier it is that your research will be designed and communicated in a way that has the power to bring about change and influence practice. Equally researchers need to be aware of and alert to the kinds of things that will interest the wider media and not to simply disregard or disrespect the power of the media voice.

It would be useful for projects to have both pre-identified targets and metrics for impact and a way of logging and recording impact throughout the project lifecycle. However, any methods developed by individual researchers or institutions for the management of impact should be sustainable in that it has the required buy-in to ensure longevity, is not cumbersome and is suitably transferable with the movement of researchers between institutions.

Finally researchers must be brave enough to court controversy and say interesting things. The ultimate sin for industry in research output is the 'so what?' question: best that the research team has taken the time to ensure that the messages that have been taken from research findings have been through the 'so what?' test in advance. The ESRC recommendation of the use of intermediaries in translation of and brokering of research knowledge is an interesting notion and worth considering as part of a research project. The project team may feel that their writing skills could not possibly be improved upon, but there is much evidence that business can find academia incomprehensible or unapproachable in terms of content, and the use of what they describe as a 'wordsmith' to package industry focused outputs may have value, as long as the research team retain the ultimate right to authorise all content.

REF has seen the introduction of very significant change in terms of the road to impact, as has the EIA in Australia. Inevitably the REF experience will be further reflected on and revisions to definitions and mechanisms are likely in both the UK and Australia. One of the most significant conclusions to be drawn by the present authors is that stakeholder engagement is key to achieving and demonstrating impact and that academic publication is no longer an end in and of itself. Impact will never look the same for two research projects/bodies of work and therefore should not (cannot) become a tick box exercise; an open mind should be maintained by researchers for identifying impact in any form, but equally researchers should be wary of producing a form of dissemination which will not substantively support impact but only demonstrate reach.

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